



Public Hearing for the Proposed Rule: Water Quality Standards; Establishment of a Numeric Criterion for Selenium for the State of California

**Wednesday, March 20, 2019
4:00 – 6:00 p.m. Pacific Time**

Virtual Public Hearing Logistics



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- **To make a public comment** – You will need to call into the conference phone line and mute your computer speakers. Call- in details will be provided when the line is opened.



Overview of Public Hearing

- Introduction and Housekeeping Items
- Overview of the Proposed Rule
- Public Comments



Lower Klamath National Wildlife Refuge;
Hollingsworth, John & Karen;
US Fish and Wildlife Service, 2008;
NCTC Image Library.



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**Monarch Migration;
Nieminen, Gene; US Fish
& Wildlife Service, 2008;
NCTC Image Library.**





Proposed Federal Rule: Water Quality Standards; Establishment of a Numeric Criterion for Selenium for the State of California

- On November 29, 2018, EPA signed a proposed rule to establish a federal Clean Water Act (CWA) water quality criterion for **selenium**, for **freshwater** in the State of California, to protect **aquatic life and aquatic-dependent wildlife** from toxic effects.
- The proposed rule was published in the Federal Register on December 13, 2018 at 83 FR 64059.

Devereux Slough Coastal Wetland Project, Santa Barbara County; US Fish and Wildlife Service, 2010; NCTC Image Library.





Proposed Federal Rule: Water Quality Standards; Establishment of a Numeric Criterion for Selenium for the State of California

Presentation

- 1. Background**
- 2. Scope Of Proposed Rule**
- 3. Criterion Elements**
- 4. Proposed Criteria Options**
- 5. Implementation**
- 6. Economic Analysis**



Background

- CWA § 101(a)(2) establishes the national goal that water quality should provide for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water. In this proposal, the relevant goals are the protection and propagation of fish, shellfish, and wildlife.
- CWA § 303(c)(2)(A) requires that whenever a state revises or adopts a new water quality standard, the state's standard shall specify the designated uses of the waters and water quality criteria to protect those uses. For example, to protect waterbodies designated with aquatic life uses, states must establish aquatic life criteria for those waters.



Background

- CWA § 303(c)(2)(B) requires states to adopt numeric water quality criteria for priority toxic pollutants for which EPA has issued CWA § 304(a) recommended criteria, when the presence or discharge of the pollutant could reasonably be expected to interfere with maintaining the designated uses.
- CWA § 304(a) requires EPA to periodically publish criteria recommendations reflecting the latest scientific information, for states to consider to meet these CWA goals.



Background

- In 1997, in a proposed rule for California, the EPA Administrator made a determination under CWA § 303(c)(4) that numeric water quality criteria were necessary in California to protect California's designated uses.
- In 2000, EPA promulgated the California Toxics Rule (CTR) (40 CFR Part 131.38). The CTR established numeric water quality criteria for priority toxic pollutants for inland surface waters and enclosed bays and estuaries within California. The CTR included a chronic selenium criterion for the protection of aquatic life to limit the adverse effects of selenium in freshwater, but did not include an acute criterion for freshwater.
- The chronic criterion for freshwater in the CTR is based on the CWA § 304(a) 1987 recommended water quality criterion, and reflected the latest science at that time.



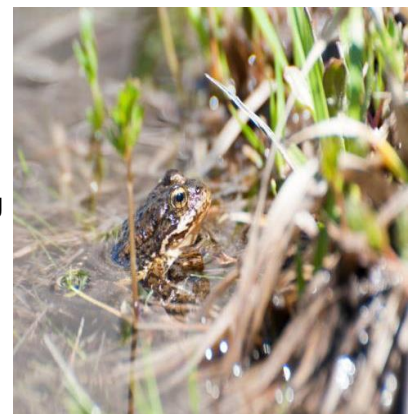
Background

- In 2013, Our Children's Earth Foundation and the Ecological Rights Foundation (plaintiffs) sued EPA, alleging in part, that EPA had failed to establish selenium criteria consistent with the requirements of the CWA.
- In August 2014, EPA entered into a Consent Decree with the plaintiffs that required EPA to propose selenium criteria for California fresh waters covered by the CTR to protect aquatic life and aquatic-dependent wildlife by November 30, 2018.

**Great Egret,
Siskiyou County;
Menke, Dave; US Fish
& Wildlife Service, 2006;
NCTC Image Library.**



**Mountain Yellow-legged Frog
Canfield, Doug; US Fish
& Wildlife Service, 2017;
NCTC Image Library.**





Background

- In June 2016, EPA noticed the availability of a revised CWA § 304(a) recommended chronic selenium criterion for the protection of aquatic life in freshwater, based on the latest scientific knowledge on selenium toxicity and bioaccumulation.
- The revised CWA § 304(a) recommended selenium criterion includes fish tissue elements to better reflect the bioaccumulation of selenium into the food web.
- Current science shows that an acute criterion is not necessary to protect against the lethal effects of selenium, if a protective chronic criterion is in place. The chronic criterion will protect against sublethal effects and the effects of short-term elevations of selenium that are introduced into the food web that could result in chronic effects.



Background

- EPA's proposal of a revised chronic selenium criterion is necessary to satisfy the EPA Administrator's determination made in the CTR.
- Therefore, EPA is proposing a revised chronic selenium water quality criterion for freshwater in California based on EPA's current CWA § 304(a) recommended criterion for selenium for the protection of aquatic life and aquatic-dependent wildlife.



Chinook Salmon, Lower Tuolumne River; Cox, Dan;
U.S. Fish and Wildlife Service, 2011;
NCTC Image Library.



California Least Tern; Pavelka, Mark;
U.S. Fish and Wildlife Service, 2016;
NCTC Image Library.



Background

- If the State of California submits and EPA approves selenium criteria for the protection of aquatic life and aquatic-dependent wildlife, for all or any portion of fresh waters in California, EPA would no longer be obligated to finalize the proposed criterion for those waters.

Center Basin, Kings
Canyon National Park;
Canfield, Doug; US Fish
and Wildlife Service; 2017;
NCTC Image Library.





Scope of the Proposed Rule

- Selenium is nutritionally essential in small amounts, but toxic at higher concentrations. It bioaccumulates in the aquatic food chain and can cause reproductive impairments as well as adversely affect juvenile growth and development.



Left: Red Shiner: Spinal Deformity (Scoliosis) vs Normal
Credit: A. Dennis Lemly



Bluegill with Deformed Mouth and Craniofacial Structure (Teratogenic Effects) vs. Normal.
Credit: A. Dennis Lemly



Scope of Proposed Rule

- **Amends the California Toxics Rule (CTR), 40 CFR 131.38**
- **Replaces the Current Selenium Chronic *Freshwater* Criterion**
- **May apply to Some Estuarine Waters**
- **Does NOT Apply where California Site-Specific Objectives (SSOs) Exist**



Scope of the Proposed Rule

- After careful analyses of the species living in California, EPA is proposing the national recommended egg-ovary criterion element, and a whole body or muscle fish tissue criterion element for fish in freshwater.
- EPA is also proposing a bird-egg tissue criterion element for aquatic-dependent species in freshwater.



**Male Desert Pupfish; Keeney, Sharon;
US Fish & Wildlife Service, 2017;
NCTC Image Library.**



**Surf Scoter; Kramer, Gary;
US Fish & Wildlife Service, 2012;
Washington, D.C. Library.**



Scope of the Proposed Rule

- The proposed rule also includes two water column elements: a monthly average element and an intermittent exposure element.
- The monthly average element would be developed using one of two procedures, using site-specific information. These procedures are included in the rule, in the referenced document entitled: **Draft Translation of Selenium Tissue Criterion Elements to Site-Specific Water Column Criterion Elements for California.**
- The intermittent exposure element would be developed using the monthly average element.



Criterion Elements

Media Type	Bird Tissue	Fish Tissue ¹		Water Column ⁴	
Criterion Element	Bird Egg ²	Egg-Ovary ²	Fish Whole Body or Muscle ³	Monthly Average Exposure	Intermittent Exposure ⁵
Magnitude	11.2 mg/kg dw	15.1 mg/kg dw	8.5 mg/kg dw whole body or 11.3 mg/kg dw muscle (skinless, boneless filet)	Derived on a site-specific basis using the methodology described in Draft Translation of Selenium Tissue Criterion Elements to Site-Specific Water Column Criterion Elements for California Version 1, August 8, 2018	Derived on a site-specific basis from Monthly Average Exposure element using the following equation: $WQC_{int} = \frac{WQC_{30-day} - C_{bkgnd}(1 - f_{int})}{f_{int}}$
Duration	Instantaneous measurement ⁶	Instantaneous measurement ⁶	Instantaneous measurement ⁶	30 days	Number of days/month with an elevated concentration
Frequency	Not to be exceeded	Not to be exceeded	Not to be exceeded	Not more than once in three years on average	Not more than once in three years on average



Criterion Elements: Footnotes

1. Fish tissue elements are expressed as steady-state.
2. Fish egg-ovary supersedes any whole-body, muscle, or translated water column element for that taxon when fish egg-ovary are measured. Bird egg supersedes translated water column elements for that taxon when both are measured.
3. Fish whole-body or muscle tissue supersedes the translated water column element when both fish tissue and water concentrations are measured.
4. Translated water column values will be based on dissolved total selenium in water and will be derived using the methodology described in *Draft Translation of Selenium Tissue Criterion Elements to Site-specific Water Column Criterion Elements for California Version 1, August 8, 2018*.
5. Where $WQC_{30\text{-day}}$ is the water column monthly element derived using the methodology described in *Draft Translation of Selenium Tissue Criterion Elements to Site-specific Water Column Criterion Elements for California Version 1, August 8, 2018*, C_{bkgrnd} is the average background selenium concentration, and f_{int} is the fraction of any 30-day period during which elevated selenium concentrations occur, with f_{int} assigned a value ≥ 0.033 (corresponding to 1 day).
6. Fish tissue and bird tissue data provide instantaneous point measurements that reflect integrative accumulation of selenium over time and space in bird or fish population(s) at a given site.



Criterion Elements: Translation to Water Column

Performance-Based Approach (PBA)

Two Methods Available:

1. Mechanistic Modeling Approach:
trophic transfer of selenium through food web;
or
2. Empirical Bioaccumulation Factor (BAF) Approach:
site-specific relationship between water and tissue
selenium concentrations.



Proposed Criteria Options

1. As proposed: Footnote 'aa' using the PBA.
2. Appropriateness of and ideas for the PBA on a large scale.
3. As proposed *with an option* to use either the PBA or the CWA § 304(a) lentic/lotic water column elements (1.5 µg/L for lotic waters & 3.1 µg/L for lentic waters).



Proposed Criteria Options

4. As proposed but *instead of* the PBA, the CWA § 304(a) lentic/lotic water column elements.
5. Instead of one criterion for aquatic life (AL) and wildlife (WL), two criteria:
 - one for AL uses (using fish tissue) and
 - one for WL uses (using bird egg tissue),with either the PBA or lentic/lotic water column elements (or variations of using either/both the PBA and lentic/lotic elements).



Implementation of the Proposed Rule

- California has considerable discretion to implement the criterion, once finalized.
- Implementation mechanisms include:
 - Use of **compliance schedules** in NPDES permits in accordance with State's Policy for Compliance Schedules;
 - Development of **site-specific criteria** for added precision where appropriate; and
 - Development of **variances** (time-limited designated uses and supporting criteria).



Economic Analysis

- Estimation of potential costs; could vary greatly depending on how the State decides to implement.
- For analyses, baseline was full implementation of existing standards, then estimated incremental costs to achieve CWA lentic/lotic elements.

Estimated Annual Costs:

➤ Point Sources:	\$31.0 M - 45.7 M
➤ Non-point Sources:	\$ 9.9 M - 11.0 M
➤ Gov't Admin	\$ 0.04 M - 0.04 M
TOTAL	\$40.9 M - 56.7 M



Further Information

- To access the proposed rule and supporting documents, visit EPA's Water Quality Standards website at:

<https://www.epa.gov/wqs-tech/water-quality-standards-establishment-numeric-criterion-selenium-fresh-waters-california>

- Written comments must be received on or before **March 28, 2019.**



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To Make a Written Comment

- **Online:** www.regulations.gov and reference Docket ID No. EPA-HQ-OW-2018-0056.
- **Email:** OW-Docket@epa.gov and reference Docket ID No. EPA-HQ-OW-2018-0056.
- **Mail to:** U.S. Environmental Protection Agency, EPA Docket Center, Docket No. EPA-HQ-OW-2018-0056, Mail code: 28221T, 1200 Pennsylvania Avenue, NW, Washington, DC 20460.
- **Hand Delivery:** EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue, NW, Washington, DC 20004, Attention Docket ID No. EPA-HQ-OW-2018-0056.
 - Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

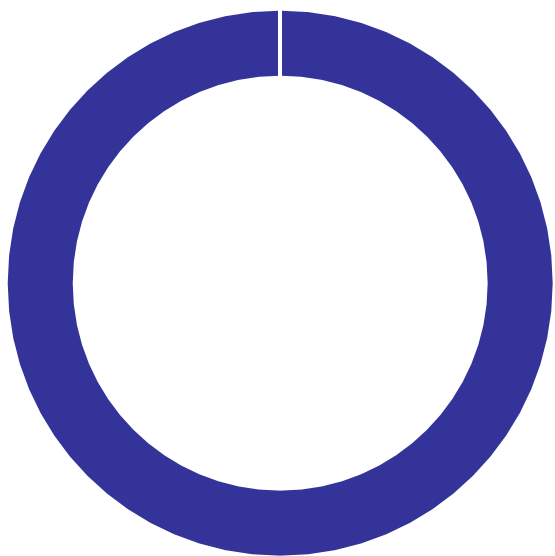


To Make an Oral Comment

- Dial: 1-877-407-4035
- Enter Pass Code: 13687483#
- Once you have joined the conference, **press *1** to be placed in queue to speak. **You may need to wait a few seconds before pressing *1** to be placed in the queue to speak.
- When prompted, record your name and organization/affiliation.
- You may have to wait in queue. When your line has been opened, the operator will announce your name. Make sure that your name/affiliation are correct when announced by the operator.
- You will have exactly three minutes to make your comment.
- Once three minutes has passed, your line will be automatically disconnected.



Less than 3 Minutes Remain



Each caller will have three minutes to provide a public comment. The diagram on this slide will show approximate time elapsed. The caller will be automatically disconnected at three minutes.

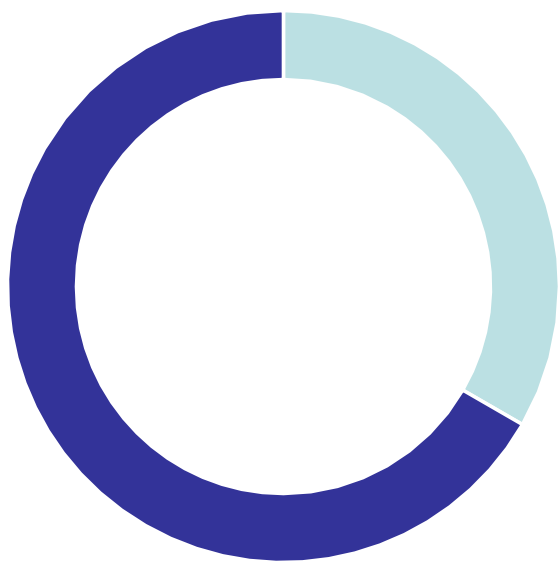
If you would like to make a public comment please call:

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Less than 2 Minutes Remain



Each caller will have three minutes to provide a public comment. The diagram on this slide will show approximate time elapsed. The caller will be automatically disconnected at three minutes.

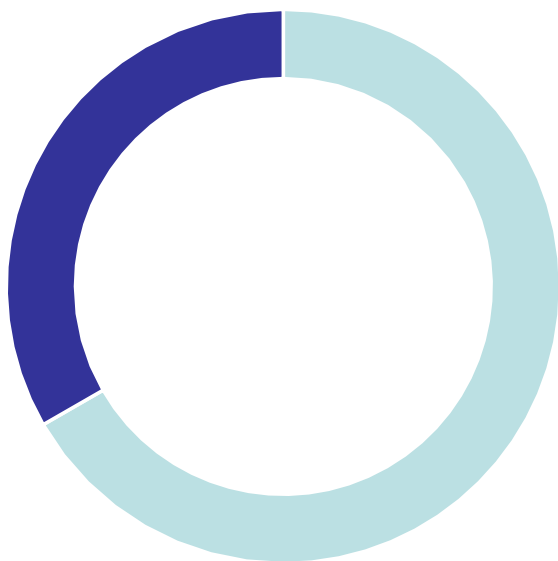
If you would like to make a public comment please call:

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Once you have joined the conference, **press *1** to be placed in queue to speak.



Less than 1 Minute Remains



Each caller will have three minutes to provide a public comment. The diagram on this slide will show approximate time elapsed. The caller will be automatically disconnected at three minutes.

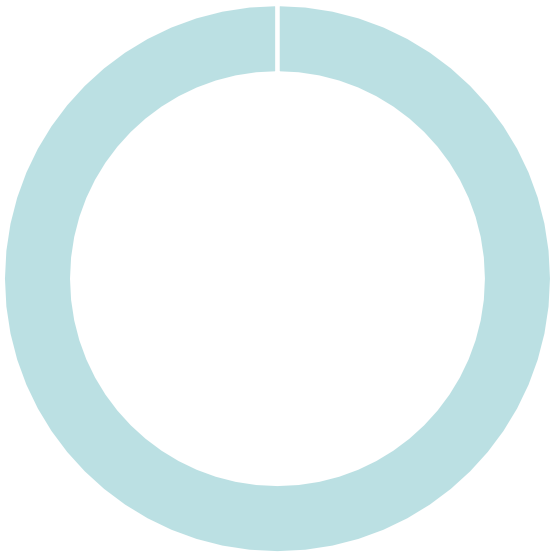
If you would like to make a public comment please call:

1-877-407-4035 code 13687483#

Once you have joined the conference, **press *1** to be placed in queue to speak.



Time is Up



Each caller will have three minutes to provide a public comment. The diagram on this slide will show approximate time elapsed. The caller will be automatically disconnected at three minutes.

If you would like to make a public comment please call:

1-877-407-4035 code 13687483#

Once you have joined the conference, **press *1** to be placed in queue to speak.



You may hear silence.

Currently There Are No Callers in the Queue.

To Make an Oral Comment Now:

- Dial 1-877-407-4035
- Enter Pass Code: 13687483#
- Once you have joined the conference, **press *1** to be placed in queue to speak. **You may need to wait a few seconds before pressing *1** to be placed in the queue to speak.
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